

Real-world cost-utility analysis of arthroscopic rotator cuff repair in Switzerland

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Background

Knowledge about benefit and costs of orthopaedic interventions is important for patients, surgeons, health policy decision makers and health care payers. Little is known about the impact of orthopaedic upper extremity procedures on quality of life (QOL) and costs in real world settings. Therefore, we conducted a cost-utility analysis from a societal perspective based on patient reported outcome measurements (PROMs) for arthroscopic rotator cuff repair (aRCR), an established therapy to treat rotator cuff tear of the shoulder.

Methods

All consecutive patients with an indication for aRCR from a large orthopaedic centre in Switzerland were included in our study. Patients served as their own controls with data from the year before surgery. They completed a QOL questionnaire (EQ-5D-5L [Utilities: 0-1]) as well as the work productivity and activity impairment questionnaire (WPAI) seven times throughout the study (period of analysis: 1 year pre-operation (OP) until 2 years post-OP). 16 major insurance companies provided direct medical cost data over the entire study period. The incremental cost-utility ratio (ICER) was estimated by non-parametric bootstrapping. Productivity losses were calculated in percent of each working patient's workload and summed up for all patients. They were assessed and calculated at enrollment, pre-OP, month 3, 6, 12 and 24 and linearly extrapolated for the periods between measurements.

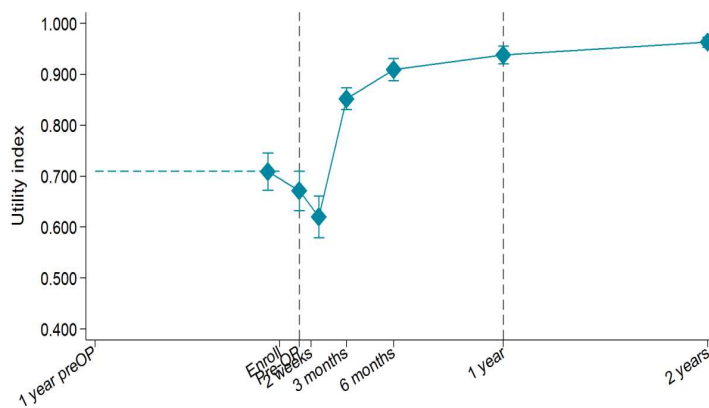


Figure 1: Development of quality of life throughout the study period

Results

153 patients (mean: 56.9 years; male: 63%) received an aRCR. QOL improved over time from 0.67 (pre-OP) to 0.94 (1 year post-OP) and 0.96 (2 years post-OP; Figure 1). Mean direct costs increased from CHF 5'479 (year pre-OP) to CHF 16'456 (first year post-OP) and decreased below the pre-OP level in the second year after surgery (CHF 4'106). The ICER for aRCR was CHF 24'173/QALY gained (95%-CI: 16'371 CHF/QALY to 31'974 CHF/QALY; Figure 2) until two years post-OP compared to the pre-OP period.

Productivity losses, calculated for 79 working patients, were at 58.5% pre-OP and peaked after surgery. This peak decreased under the pre-OP level at 16 weeks post-OP (Figure 3). Mean productivity losses were below the pre-OP level already in the first year post-OP (41.8%) and further decreased in the second post-OP year to 7.7%. Consequently, yearly indirect costs also decreased below the pre-OP level in the first year post-OP and further decreased in the second year post-OP (Table 1).

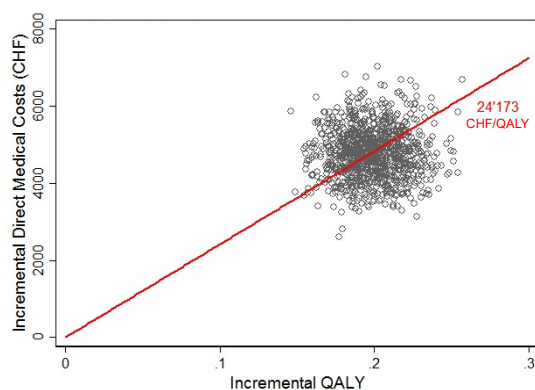


Figure 2: Incremental cost utility ratio bootstrap

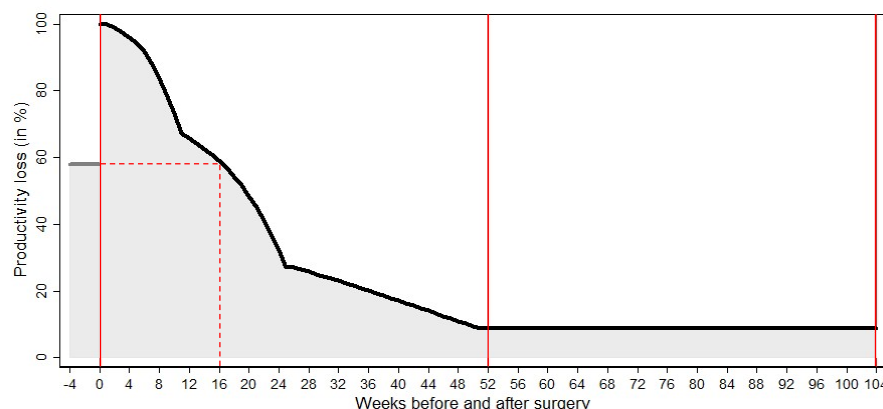


Figure 3: Productivity losses (in percent of patients workload) over time

Conclusion

Real world data for aRCR shows a cost-utility ratio clearly below the often-suggested CHF 100'000/QALY threshold for Switzerland. Together with the results from PROMs as well as data for productivity losses and indirect costs, our analyses provide evidence for good value in health care for patients and society as provided in a Swiss orthopaedic centre.

The applied methodology is an option for real-world cost-utility studies of common medical procedures in Swiss routine care.

Period	Obs	Mean	Std. Dev.	Min	Max
Before OP	79	48'134	45'071	0	220'475
One year after OP	79	34'214	23'666	1'632	109'315
Two years after OP	79	4'661	14'793	0	84'000

Table 1: Yearly indirect costs

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